

A-105
Cantor, Fitzgerald Securities
B-2 10/4/82 TMA 2392

CODES AND STANDARDS:

1. Underwriter's Laboratories, Inc. - U.L.
2. National Electrical Code of the NFPA - NEC.
3. National Electrical Code.
4. Occupational Safety and Health Act - OSHA.

D. MATERIALS AND METHODS:

1. The Contractor shall prepare and submit to the Engineer a detailed shop drawing, catalog and wiring diagram in accordance with the requirements of the clause entitled "Working Drawings and Catalogs and Drawings".
2. The Contractor shall pay all fees, give all notices, obtain all permits and approvals required in connection with this contract. He shall comply with all applicable codes, rules and regulations of the N.Y.C. Building Code, and the N.Y.C. Electrical Code.

C. SUBSTITUTION:

1. No substitution of electrical items described on the drawings shall be permitted upon written approval of the Engineer.

D. QUALITY ASSURANCE:

1. The Contractor shall have had experience on at least two projects involving quantities and complexities at least equal to those required under this division of the applicable section thereof.
2. All workmen performing under this division shall be skilled workmen of the trade involved.

E. INSPECTION:

1. All phases of the installation will be inspected for compliance with the requirements of the contract drawings and specifications. Replace any portion of the construction that does not meet such requirements to the satisfaction of the Engineer.
2. Provide proper facilities as the Engineer may require for access and for inspection at the construction site.

F. CUTTING AND PATCHING:

1. All cutting and patching required for equipment included in these specifications shall be done by this Contractor. If cutting is done due to failure to perform preliminary roughing work this Contractor will be responsible for the cost of the additional patching.
2. All floor drilling above and adjoining occupied tenant spaces of public spaces shall be performed at times approved by the Engineer.
3. This Contractor shall not do any cutting that may impair the strength of building construction. No holes, except for small screws, may be drilled in beams or other structural members, without obtaining prior approval. All work shall be done in a neat manner by mechanics skilled in their trades and as approved.

G. SCOPE OF WORK:

1. Complete wiring from all existing panels to all new panels and other electrical devices shown on the plans, or specified herein.
2. Temporary light and power as required by all trades.
3. Wiring devices and receptacles.
4. Power wiring and branch circuit wiring.
5. Complete grounding of electrical system.
6. Connections to mechanical equipment including all required disconnect switches.
7. Mounting of the power wiring to motor starters furnished by others. Control wiring by others unless indicated on drawings.
8. Telephone empty conduit system.
9. Furnishing and installing circuit breaker and wiring for new A.C.

ON THE DRAWINGS, WITH QUICK AND EASY REFERENCE:

1. Switches shall be furnished with a Nema 1 enclosure of code type steel (UL98) for interior use.
2. Switches shall be horsepower rated 20 volts AC and shall be as manufactured by Square D, Cutler Hammer or accepted equal.

RACEWAYS:

1. Thinwall conduit (EMT) for exposed work, system wiring feeders, and empty conduits. Flexible conduit (flexcon) for final motor connections. Minimum size for all conduit shall be 3/4".
2. Armored cable (BX) for branch circuit work except where prohibited by N.Y.C. Electrical Code. Armored cable shall not be installed under raised floors.
3. Surface metal raceway (wiremaid) where indicated on the drawings.
4. All work shall be concealed in finished places, unless noted otherwise, and exposed in unfinished spaces.

CABLES:

1. Unless otherwise specified or specified by indicated on the drawings, all conductors for power shall be tinned single conductor annealed type with type insulation and a minimum of 98 percent conductivity.
2. In lieu of a separate green grounding wire and grounding bushing, flexible metallic raceway for connection of lighting fixtures may be utilized as the grounding conductor if a locking type construction shakeproof connector especially designed to insure positive grounding is provided.

COLOR CODING:

1. The Contractor shall match the color coding that is being used in the building - any deviation due to limited quantities of cable, may be permitted upon written approval by the Engineer.

120/208V	PHASE	277/480V
Black	A	Brown
Red	B	Orange
Blue	C	Yellow
White	Neutral	Gray
Green	Ground	Green

L. CONNECTIONS:

1. THHN wiring receptacles including outlets for miscellaneous devices and for electric power, including all 120/208V. Connections shown on the drawings, shall be furnished and installed complete from point of service connection to all outlets indicated on drawings.

M. CABLE SPLICING:

1. No splices or joints will be permitted in either feeders or branches except at outlets or accessible terminal, splice or junction boxes.

N. GROUNDING:

1. Metal raceways, metal enclosures of electrical devices and equipment, lighting standards and other equipment shall be completely grounded in an approved manner.
2. Provide hardware required for complete grounding system, shall be installed by the Contractor.

O. FASTENERS:

1. Provide inserts, expansion shield lugs, anchors, bolts with nuts and washers, shims or any other type of fastening devices required to fasten panels or other equipment to foundations, floors, walls or ceiling. Unless otherwise specified herein or shown on the drawings, all fasteners shall be hot-dipped galvanized and of sizes and types recommended by the equipment manufacturer and as approved by the Engineer.
2. All materials required for making splices and or terminations shall be supplied in complete kits - not older than 6 months - the Contractor shall also be responsible to insure that all materials furnished will not adversely effect the physical or electrical properties of any other, or of the wire or cable itself. Kits shall be manufactured by Mac Prod. Inc., Kearny, N.J. or approved equal.

3. All splices for wire sizes #10 and smaller shall be made with insulated spring connectors applied to twisted conductors. Two half lapped laps of wires shall be used. A distance of not less than 12 inches from the connector shall be applied. Splices other than the aforementioned, will be permitted at the discretion of the Engineer.

P. IDENTIFICATION OF WIRES:

1. All wires shall be identified by circuits in all cabinets, boxes, wiring troughs and other enclosures, and at all terminal points, e.g., receptacles, etc.
2. The circuit designations shall be as shown on the contract drawings, or as directed by the Engineer. Tags shall be attached to wires so that they will be readily visible.
3. Brady, #500 vinyl cloth wire and terminal markers shall be used for all wire identification.

Q. PANELBOARDS:

1. Furnish and install the new equipment to circuits from the existing panel as shown. Existing circuit breakers for discontinued existing circuits shall remain as spares.
- a. The existing panel, in which circuits are changed, the existing panel directory shall be replaced by a new typed directory card. Contractor shall check and identify all existing circuits that are to remain as well as all new existing circuits.

R. FINAL CLEANUP AND FIELD TESTS:

After completion of the entire electrical installation:

1. The Contractor before final acceptance will be granted shall clean all panelboards, cabinets, device places, service fittings and other items furnished under this contract, and shall insure that all directories are in place with completed or revised schedules and all identifications and markings of equipment, cables, and other items are completed.
2. The Contractor shall repair or replace, as directed by the Engineer, at no additional cost, any item damaged due to installation, relocation or reinstallation.
3. In addition to other tests which may be required in the various other disciplines, perform field tests in the presence of the Engineer, to demonstrate the reliability of the electrical installation. Give the Engineer 48 hours advance notice of such tests. The following field tests shall be performed by the Contractor.
- a. Operate all electrical equipment for a period of 24 hours, unless otherwise directed by the Engineer.
- b. Test all wires and cables installed under this contract with a 1000 volt megohmmeter. Furnish the Engineer a copy of the results together with an outline of the method used. If in the opinion of the Engineer, any readings are lower than required by good practice or applicable codes promptly replace the materials or equipment involved.
- c. Should the foregoing tests reveal any defects, promptly correct such defects and re-run tests until the entire installation is satisfactory to all respects.

S. POWER INTERRUPTION NOTE:

1. Electrical power must be shut off prior to the Contractor performing any work in raceways with live electrical circuits or on any other live electrical circuits or equipment. Power interruption will be permitted only between the hours from 6 p.m. and 2 a.m. The actual dates, time and duration of all power interruptions shall be subject to prior approval of the Engineer.

T. TEMPORARY LIGHT AND POWER FOR CONSTRUCTION:

1. Provide and fully maintain all facilities for temporary light and power within the construction area during the entire building period, for safety of personnel, utilizing the existing electric services in the area as arranged with the building owner by the Electrical Contractor. Temporary system to be kept energized during standard working day of all trades plus 15 minutes before and after working period.

U. SHOPPING:

1. Manufacturer of panels and other equipment shall be approved by the Engineer. All equipment shall be of the highest quality and shall be of the type specified on the drawings. The Contractor shall be responsible for the selection of the equipment and shall be responsible for the cost of the equipment. The Contractor shall be responsible for the cost of the equipment. The Contractor shall be responsible for the cost of the equipment.

V. RECORD DRAWINGS:

1. The Contractor shall prepare and submit to the Engineer a set of record drawings showing the actual installation. The record drawings shall be prepared by the Contractor and shall be submitted to the Engineer for approval. The Contractor shall be responsible for the cost of the record drawings. The Contractor shall be responsible for the cost of the record drawings.



CANTOR FITZGERALD SECURITIES CORP.
WORLD TRADE CENTER

ALTERATION TO MUNI ROOM 105TH FLOOR
ELECTRICAL SPECIFICATIONS

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TMA/TAA NO. 2392
DATE APPROVED 12/1/82

Released for Construction